

VERTE.032CPCCC1D

PATENT

Serial No. 10/726,774

Response to Office Action of November 15, 2005

REMARKS

Claims 1 and 3-11 are in the case.

In paragraph 4 of the Office Action, claims 1-11 were rejected under 35 U.S.C. § 102(b) as being anticipated by newly cited U.S. Patent 5,017,236 ("Moxness"). The Office Action cites Moxness as disclosing "a method an apparatus for liquid processing of substrates, such as semiconductor wafers or other such items, using high frequency sonic wave energy, including megasonic or ultrasonic wave energy. See col. 1, lines 6-29. The reference [Moxness] discloses maintaining the substrate substantially horizontal. See Fig. 2. The reference discloses substrate chamber 12 is provided for maintaining a substrate 14 immersed in liquid processing solution. See col. 3, lines 41-43. The substrate chamber is further provided with appropriate inlet and outlet ports for flowing processing solution and ultrapure water there through. See col. 4, lines 48-49...."

While Applicant does not disagree with the Examiner's recited disclosure of the Moxness substrate processing system, the Moxness system is substantially different from the present invention in both its function and design. Specifically, the Moxness system comprises a single-wafer chamber 12 that supports a substrate 14 in a substantially horizontal orientation. See *Moxness*, Fig. 2. Processing solutions are applied to both sides of the substrate 14 through an immersion technique. See *Moxness*, col. 3, lines 39-61. However, it is important to note that the transducer assembly of the Moxness system, including the ceramic transducer 20 and the funnel transmitter 22, are coupled to the side of the process chamber 12. See *Moxness*, fig. 2 and col. 3, line 62-col. 4, line 14. The transmitter 22 is horizontally aligned with an edge of the substrate 14. See *Moxness*, fig. 2 and col. 3, line 62-col. 4, line 14. Thus, when the transducer 20 is activated, the transmitter 22 transmits the sonic wave energy in a horizontal direction through the processing solution and across the planar surfaces of the substrate 14 simultaneously. See *Moxness*, col. 4, lines 15-21.

To the contrary, in the present invention, the sonic energy is transmitted "to the liquid on one side of the substrate so that the sonic energy passes through substrate and to the

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opposite side of the substrate, thereby loosening particles on both sides of the substrate."

Claim 1 has been amended to recite this distinction. Thus, it is believed that the rejection of claim 1 under 35 U.S.C. § 102 over Moxness has been overcome. Moreover, one skilled in the art would not be motivated to modify the Moxness system to operate in the claimed manner. Such a modification would require an entire overhaul and redesign of the Moxness system, including repositioning of the transmitter either above or below the substrate. As can be seen, the Moxness process chamber 12 has no room for such positioning without severely inhibiting the vital fluid dynamics of the system.

Regarding claim 5, claims has been amended to positively recite the step of "positioning a transmitter adjacent to the other one of said planar sides of the substrate" and "applying energy to the other one of said sides via the transmitter with sufficient power to produce vibration on said one side in an area of said cleaning fluid to loosen particles on said one side." Thus, for the reasons discussed above with respect to claim 1, Moxness does not disclose such a process. Therefore, the rejection of claim 5 over Moxness has been overcome.

It is believed that all grounds of rejection and objection have been traversed or obviated, and that the rejections and objection should be withdrawn, and the application allowed.

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